# Advanced, Compact, Ultraviolet Imaging Spectrometer for Planetary Systems (AUVIS)

Completed Technology Project (2015 - 2018)

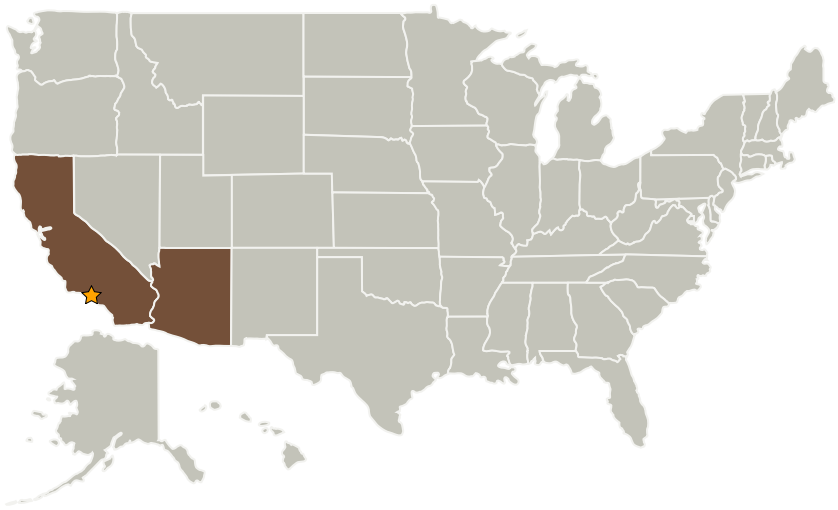
## Project Introduction

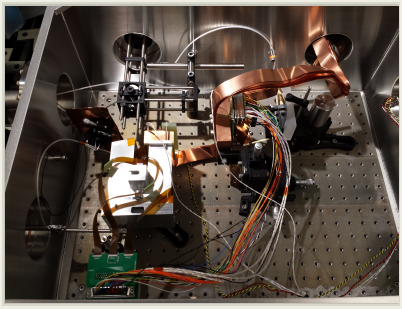
The Advanced, Compact, Ultraviolet Imaging Spectrometer for Planetary Systems will advance the capabilities of ultraviolet imaging spectrometers by improving the light collecting efficiency of the detector compared to current designs. Additionally, the development will help to reduce design risks associated with the mass and power required to operate the detector. The detector is a solid state photon counting device that has high efficiency and high dynamic range in the far UV wavelengths. This detector would replace the microchannel plate detectors currently used by existing ultraviolet spectrometers. Microchannel plate detectors require high voltages to operate while solid state detectors can operate using low voltages. The elimination of a high voltage power supply helps to reduce the failure risk.

## Anticipated Benefits

Ultraviolet spectrometers have been present on many planetary missions to collect scientific data on the atmospheres and surfaces of various targets such as the planets, moons, comets and asteroids. At large distances from the Sun, the amount of light available for an instrument is quite low, requiring precision efforts to collect the desired data. Improving the efficiency and dynamic range of the detector in a spectrometer will help to collect addtional scientific data as well as relax the stringent requirements on spacecraft navigation which can help reduce mission costs. Additionally, the risks involved in using the currently available detectors can be reduced with the new detector development.

## Primary U.S. Work Locations and Key Partners





Test chamber with prototype spectrometers mounted

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## Organizational Responsibility

**Responsible Mission Directorate:**

Mission Support Directorate (MSD)

**Lead Center / Facility:**

Jet Propulsion Laboratory (JPL)

**Responsible Program:**

Center Independent Research & Development: JPL IRAD

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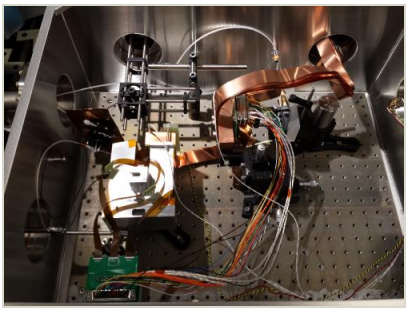
| Organizations Performing Work | Role | Type | Location |
|---|---|---|---|
| ★Jet Propulsion Laboratory(JPL) | Lead Organization | NASA Center | Pasadena, California |
| University of Arizona | Supporting Organization | Academia<br>Alaska Native and Native Hawaiian Serving Institutions (ANNH), Hispanic Serving Institutions (HSI) | Tucson, Arizona |

| Primary U.S. Work Locations | |
|---|---|
| Arizona | California |

## Images



**Project Image**
Test chamber with prototype spectrometers mounted
*(https://techport.nasa.gov/image/26052)*

## Project Management

**Program Manager:**
Fred Y Hadaegh

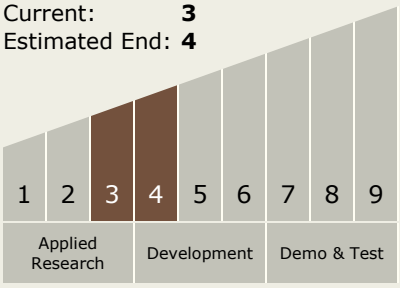
**Project Manager:**
Fred Y Hadaegh

**Principal Investigator:**
Shouleh Nikzad

**Co-Investigators:**
Alexander G Carver
Walter M Harris
Pantazis Mouroulis
Daniel W Wilson

## Technology Maturity (TRL)

Start: **3**
Current: **3**
Estimated End: **4**




## Technology Areas

**Primary:**

- TX08 Sensors and Instruments
  - TX08.1 Remote Sensing Instruments/Sensors
    - TX08.1.1 Detectors and Focal Planes